ABSTRACT OF THE DISCLOSURE

A device and method to determine the biological heat potential consists of an acclimation apparatus for aerobic seed source, a reactor to carry out the desired biological reaction, an external temperature controller to control and heat the ambient air surrounding the reactor at a preset temperature, an oxygen controller to supply and record the oxygen depleted within the reactor with an output of oxygen uptake data, an internal heat controller to control and heat the reactor at a preset temperature with an output of heat compensation data. Based on the oxygen uptake data and heat compensation data, uses a specific biological heat potential evaluator to compute a specific biological heat potential and a heat loss flux. Then uses a heat compensation ratio evaluator to compute a transient heat compensation ratio and a minimal heat compensation ratio during the reaction period for evaluating the spontaneity of an ATAT system.